
DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention belongs to the technical field of the plasma display panel (it is hereafter described as PDP) which is the monotonous display of the spontaneous light format of having used gas discharge.

[0002]

[Description of the Prior Art] Generally, PDP prepares the electrode of the pair regularly arranged to two glass substrates which counter, respectively, and has structure which enclosed the gas which makes Ne, Xe, etc. a subject between them. And it is made to display by impressing an electrical potential difference to inter-electrode [these], and generating discharge within the minute cel of the electrode circumference by making each cel emit light. In order to carry out an information display, the electroluminescence of the cel regularly located in a line is carried out alternatively. There are two types of the direct-current mold (DC mold) which the electrode has exposed to discharge space, and the alternating current mold (AC mold) covered by the insulating layer of these PDP(s), and both sides are further classified into a refresh drive method and a memory drive method according to the difference in a display function or the drive approach.

[0003] The example of 1 configuration of the AC mold PDP is shown in drawing 1. This drawing is what was shown where a front plate and a tooth-back plate are detached, like illustration, it is arranged face to face mutually in parallel [two glass substrates 1 and 2], and both are held at fixed interval with the rib 3 each other prepared in parallel on the glass substrate 2 used as a tooth-back plate. The composite electrode of each other which consists of a maintenance electrode 4 which is a transparent electrode, and a bus electrode 5 which is a metal electrode is formed in the tooth-back side of the glass substrate 1 used as a front plate in parallel, this is covered, the dielectric layer 6 is formed, and the protective layer 7 (MgO layer) is further formed on it. Moreover, it is located between ribs 3 and the address electrode 8 of each other is formed in parallel so that it may intersect perpendicularly with said composite electrode at the front-face side of the glass substrate 2 used as a tooth-back plate, and as this is covered, a dielectric layer 9 is formed and the wall surface and cel base of a rib 3 are covered further, the fluorescent substance 10 is formed. This AC mold PDP is a field discharge mold, and is the structure of impressing alternating voltage and making it discharging between the composite electrodes on a front plate. And a fluorescent substance 10 is made to emit light by the ultraviolet rays produced by this discharge, and an observer checks by looking the light which penetrates a front plate.

[0004] Thus, in PDP, although discharge space is divided with a rib, in the usual case, the rib of the same configuration not only as a viewing area but its outside is formed. This is not called a dummy rib and does not contribute to the lighting display as a display directly. Such a dummy rib is prepared in order to lessen that the effect of [in case a glass substrate bends around at the time of panel-izing] attains to a viewing area. Moreover, when filled up with a fluorescent substance paste by screen-stencil, in order to make it changing [at viewing-area both ends / conditions]-with bending of screen version protection and a fill not serve as an ununiformity, it is formed also in the semantics which gives allowances. Or when forming a rib with sandblasting, at both ends, it is shaved off mostly and a rib becomes thin, but if a dummy rib is prepared in the place which does not have effect in a viewing area, even if the dummy rib becomes thin, a dummy rib will be formed also for the purpose of being unrelated to a display.

[0005]

[Problem(s) to be Solved by the Invention] Generally the above-mentioned AC mold PDP is formed only from the rib which was parallel to the address electrode. Therefore, although abnormality discharge hardly runs in the direction in which a rib adjoins, generating of abnormality discharge may exist in the direction in which a rib is prolonged. And in a periphery, since it is easy to come out of abnormality discharge, the abnormality discharge resulting from the dummy rib section also exists.

[0006] Moreover, although PDP is formed by sticking a front plate and a tooth-back plate, since the inside of a panel is exhausted at the time of lamination and thrust is applied to a rib in that case, especially as for the reinforcement of the dummy rib of the substrate periphery which requires big thrust, the larger one also has the problem of being good.

[0007] This invention is made in view of such a situation, and the place made into the purpose is to offer PDP which the reinforcement of a dummy rib also raised while controlling the abnormality discharge resulting from a dummy rib.

[0008]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention consists of a parallel part parallel to the electrode with which the dummy rib formed in the outside of a viewing area among said ribs was formed in the substrate front face, and a rectangular part which intersects perpendicularly with that parallel part in PDP which has the rib which divides discharge space, and it is made for the gap which arrives at the substrate front face in which the rib was formed from the crowning to exist in this rectangular part.

[0009]

[Embodiment of the Invention] An example of a dummy rib is shown in drawing 2. This example is a thing about the AC mold PDP of the type shown in drawing 1, and although two or more dummy ribs (drawing 3) 11 are formed in the outside of the rib 3 of a viewing area and illustration is not carried out as shown in this drawing, the two or more same dummy ribs also as the opposite side are formed. These dummy ribs 11 consist of rectangular partial 11b which intersects perpendicularly with parallel part 11a parallel to a rib 3 and its parallel part 11a of a viewing area, respectively. And the gap alpha which arrives at a substrate front face from a crowning is established in rectangular partial 11b. As drawing 1 explained, the rib 3 of a viewing area is formed in parallel with the address electrode 8 formed in the substrate front face, therefore parallel part 11a of the dummy rib 11 has sense to which the address electrode 8 and rectangular partial 11b cross at right angles again at the sense parallel to the address electrode 8.

[0010] In this type of PDP, although each discharge space is prepared for every intersection of the address electrode of a tooth-back plate, and the composite electrode of a front plate, as for the gap alpha of rectangular partial 11b in the dummy rib 11, existing to each discharge space is desirable.

[0011] Moreover, as for the width of face of the gap alpha of rectangular partial 11a, it is desirable that it is the dimension of 1 / 10 - 1/2 to the adjoining distance between ribs. Unless it fulfills 1/10, reinforcement of the dummy rib 11 cannot be enlarged. If one half is exceeded, the exhaust air at the time of panel-izing cannot fully be performed, or the problem that exhaust air takes time amount will arise.

[0012]

[Example] First, after carrying out pattern formation of the address electrode on the glass substrate used as a tooth-back plate, it was covered, the dielectric layer was formed and the Rhine-like rib was formed by the sandblasting method on the dielectric layer. In this case, as shown in drawing 2, two or more dummy ribs (drawing 3) 11 were formed in the outside (in fact both outsides) of the rib 3 in an effective viewing area as the dummy rib section. The pitch of the formed rib 3 and the dummy rib 11 is [the opening width of 120 micrometers and a rib crowning of 360 micrometers and height] 300 micrometers. And the rectangular part was formed in the die-length direction of the dummy rib 11 by pitch 1080micrometer, and the gap with a width of face of 100 micrometers was prepared in the center of the rectangular part.

[0013] After forming even this rib, the screen version with an opening Rhine width of face of 200 micrometers was used, and it was filled up with the fluorescent substance paste to rib space with the screen printer. It was filled up with the paste (fluorescent substance: "P1-G1S" by Kasei Optonix, Ltd.35wt%, and resin solid content 6.8wt%, and solvent 58.2wt%) containing the fluorescent substance of the green luminescent color between predetermined ribs, and, specifically, it was dried for 30 minutes at 120 degrees C. It filled up with the paste (fluorescent substance: "KX-501A" by Kasei Optonix, Ltd.27wt%, and resin solid content 7.8wt%, and solvent 65.2wt%) which contains the fluorescent

substance of the blue luminescent color similarly, and the paste (fluorescent substance: "KX-504A" by Kasei Optonix, Ltd.35wt%, and resin solid content 4.1wt%, and solvent 57.9wt%) containing the fluorescent substance of the red luminescent color between each rib, and was made to dry similarly. Thus, after carrying out like the packer of a fluorescent substance paste, the phosphor screen was formed in rib space through the baking process at the last.

[0014] AC mold color PDP of the field discharge mold with which the three primary colors of R, G, and B are checked by looking was produced like the above by sticking the front plate produced separately to the tooth-back plate in which the phosphor screen was formed to rib space. Neither deformation nor a chip was looked at by the dummy rib which the force requires at the time of lamination.

[0015] Moreover, when AC mold color PDP which carried out in this way and was produced was made to drive, abnormality discharge like before did not take place in the dummy rib section.

[0016]

[Effect of the Invention] In PDP which has the rib with which this invention divides discharge space as explained above A parallel part with the dummy rib parallel to the electrode formed in the substrate front face formed in the outside of a viewing area among said ribs, Since it constituted so that it might consist of a rectangular part which intersects perpendicularly with that parallel part and the gap which arrives at the substrate front face in which the rib was formed from the crowning might exist in this rectangular part Since discharge space is surrounded by a parallel part and the rectangular part, flying to the cel which a charge adjoins is prevented and it can control abnormality discharge as a result. Moreover, since the reinforcement of a dummy rib improves with a parallel part and a rectangular part supporting each other, it can fully respond also to the strong thrust at the time of panel-izing.

[Translation done.]

CLAIMS

[Claim(s)]

[Claim 1] The plasma display panel which the dummy rib formed in the outside of a viewing area among said ribs consists of a parallel part parallel to the electrode formed in the substrate front face, and a rectangular part which intersects perpendicularly with that parallel part in the plasma display panel which has the rib which divides discharge space, and is characterized by the gap which arrives at the substrate front face on which the rib was formed in this rectangular part from the crowning existing.

[Claim 2] The plasma display panel according to claim 1 with which a gap exists to each discharge space.

[Claim 3] The plasma display panel according to claim 1 or 2 which is the dimension of 1 / 10 - 1/2 to the distance between ribs which the width of face of a gap adjoins.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] an example of a plasma display panel -- the front plate and tooth-back plate -- alienation -- it is the perspective view shown in the condition.

[Drawing 2] It is the explanatory view showing an example of a dummy rib.

[Description of Notations]

1 Two Glass substrate

3 Rib

4 Maintenance Electrode

5 Bus Electrode

6 Dielectric Tub

7 Protection Tub

8 Address Electrode

9 Dielectric Tub

10 Fluorescent Substance

11 Dummy Rib

11a Parallel part

11b A rectangular part

alpha Gap